

*Bostrychia* on mangrove roots, Tokas Cay (A.M.N.H. 84892) and Cavelle Pond, South Bimini (A.N.S.P. 252671 & U.S.N.M. 613497) [0.6 and 1.1 miles from type locality, respectively]. Additional specimens from algae on mangrove roots at west end Hog Cay, Exuma Cays, and sand from Green Turtle Cay, Great Abaco, both Bahama Islands (both A.N.S.P.). All specimens collected by the author. Pigeon Cays, Andros, Bahama Islands, with *R. caribaea* in algae (McGinty).

*Remarks.* This species differs from *R. caribaea* in having a smaller shell (less than half the length of *R. caribaea* when full-grown) with a slightly different outline. There is a white band on the shell which is not present in *R. caribaea* and the umbilical shelf is wider and shorter. The predominant color of the body of the two species also differs consistently; that of *R. caribaea* is black, while that of *R. galba* is pale yellow. Juveniles of *R. caribaea* much smaller than any of the specimens of *R. galba* were seen to have black bodies.

*R. galba* does not closely resemble any of the Eastern Pacific species so far described (Bartsch, 1920, 1927; Baker, Hanna & Strong, 1930; Strong, 1938; Smith & Gordon, 1948). Its small size and white band on the shell distinguish it from all other described species of *Rissoella*. The four 'tentacles' were seen, so *R. galba* is definitely a *Rissoella*. It is not juvenile because there are  $3\frac{1}{2}$  whorls; most species of *Rissoella* have 3-4 whorls.

As stated above, *R. galba* was found in the same habitat as that in which *R. caribaea* apparently invariably lives in the Bahama Islands, namely in *Bostrychia* on mangrove roots. Three specimens of *R. galba* were also found in filamentous green algae. *R. caribaea* is much more abundant at Bimini and Exuma (Bahamas) than *R. galba*: only 12 specimens of *R. galba* were collected while hundreds of *R. caribaea* were obtained.

*Derivation of name.* Latin, galbus, yellow (referring to the predominant color of the body).

(To be continued)

## COLUBRARIIDAE (GASTROPODA) OF TROPICAL WEST AMERICA, WITH A NEW SPECIES

BY G. BRUCE CAMPBELL

In August, 1960, the 105-foot shrimp trawler, "Ariel," dredged 6 days off Cabo Haro, Mexico, and southeastern Baja-Lower Calif.

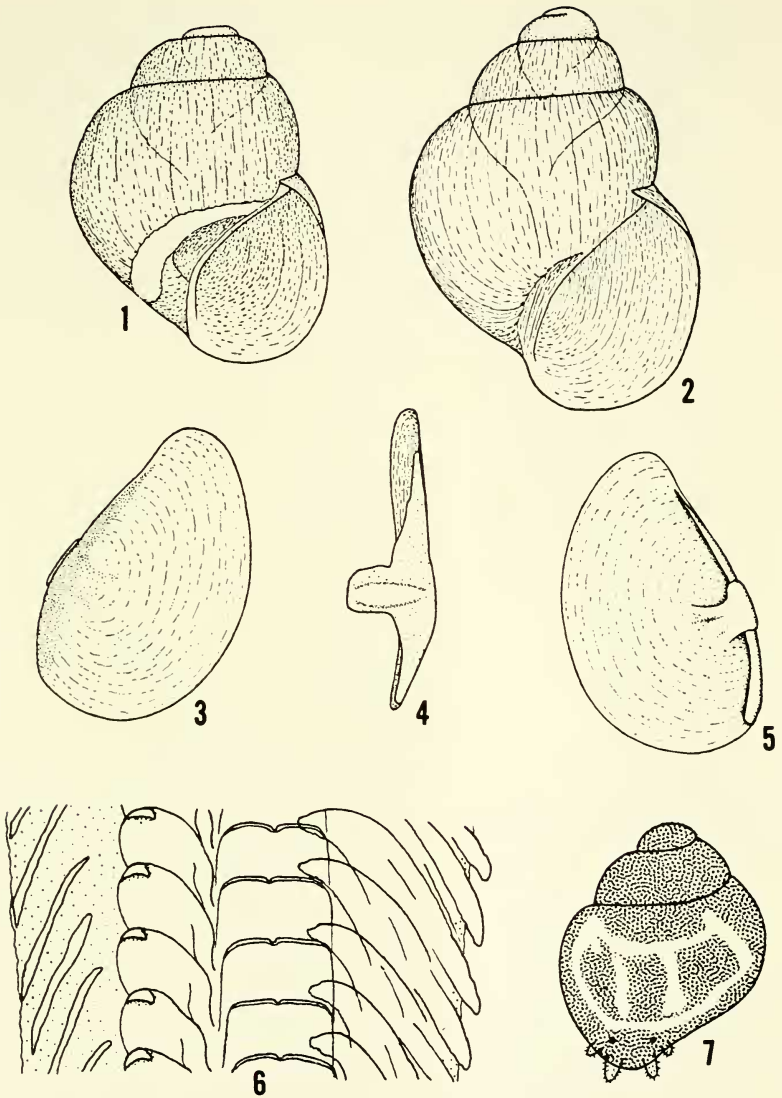
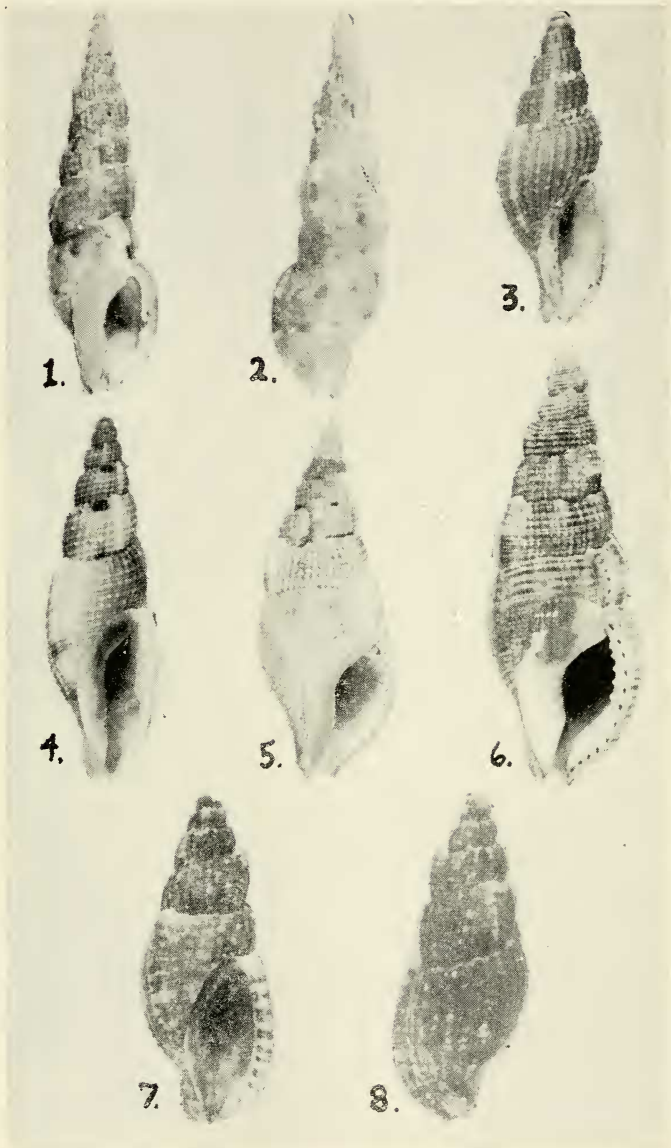


Fig. 1. *Rissoella galba* Robertson. Holotype, X60. Figs. 2-7. *Rissoella caribaea* Rehder, Bimini, Bahama Islands. 2. Shell, X34. 3. Exterior of operculum. 4. Side (columellar) view of same 5. Interior of same. 3-5, all X65. 6. Radula, X867. 7. Dorsal view of live animal, ca. X30. R.R. del.



Figs. 1 & 2, *Colubraria jordani* Strong, holotype. 3, *C. aphrogenia* Pilsbry & Lowe, holotype, ANSP. 155341. 4, *C. siphonata* (Reeve), Perlas Islands, Panama; Burch collection. 5, *C. lucasensis* Strong & Hertlein, holotype, C.A.S. 6995. *C. soverbii* (Reeve), 100 fathoms, Cabo Haro, Guayamas, Mexico; Donald Shasky coll. 7 & 8, *C. xavieri* Campbell, holotype.

She was chartered and specially outfitted by Dr. Donald Shasky and Captain Xavier Mendoza. Aboard were 21 passengers, including John Q. Burch, Dr. Antonio Garcia from the University of Mexico, and Dr. Myra Keen. Three species of *Colubraria* were obtained on this trip. The purpose of this paper is to suggest the number of valid species found in tropical west America, determine the appropriate synonymy, and enumerate the problems encountered and their most likely solution. No attempt is made to evaluate other species of Colubariidae, except where they have been confused with or reported from the Panamic area.

Appreciation is expressed to The Academy of Natural Science of Philadelphia through Dr. R. Tucker Abbott for the loan of 6 lots of *Colubraria* including Pilsbry and Lowe's holotype, and to the San Diego Museum of Natural History through Mr. E. P. Chace for the opportunity to study the Lowe collection; to John Q. and Rose Burch for the use of their library and pertinent material; to Gale Sphon, Jr. and Dr. Donald Shasky for the loan of specimens; to Dr. Myra Keen for her suggestions and critical reading of the manuscript, and the Department of Geology of Stanford University for study material; also to the California Academy of Sciences, through Drs. G. D. Hanna and L. G. Hertlein for advice and types to study, and to Mr. S. P. Dance and the British Museum.

COLUBRARIA Schumacher, 1817

COLUBRARIA JORDANI Strong, 1938. Pl. 10, fig. 1, 2; text—fig. 1 *Epidromus nitidulus* (Sowerby). Strong and Hanna, 1930, Proc. Cal. Acad. Sci., (4) 19 (2): 11. list (not *Triton nitidulus* Sowerby).

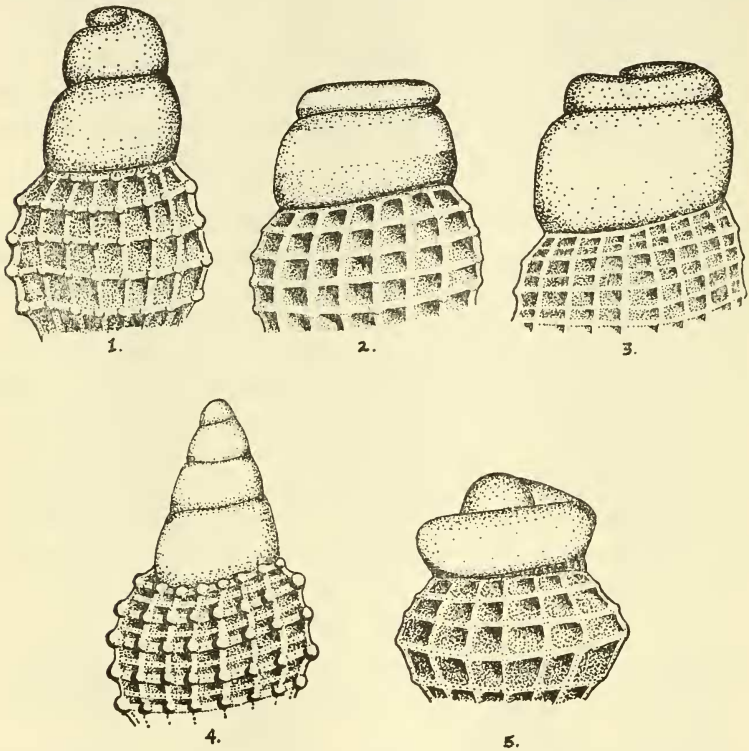
"*Colubraria jordani* Strong (MS)." Hertlein, 1937, Proc. Amer. Philos. Soc. 78 (2): 306. Nomen nudum. *C. jordani* Strong, 1938, Proc. Cal. Acad. Sci. (4) 23: 212, pl. 16, fig. 8.

*Description*: Most slender of the Panamic *Colubraria*, this species is light brown with two spiral rows of darker spots, the  $2\frac{1}{2}$  whorls of the protoconch are followed by 11 subsequent whorls, each with 3 or 4 spiral threads crossed by equally fine axial riblets and 1 or 2 varices; base short, rounded; canal short, recurved. Length 35 mm., maximum width, 10 mm.

*Type*: Holotype no. 7017, Calif. Acad. Sci. Paleo. Type Coll. *Type locality*: Socorro Island, Revillagigedo group, Mexico, G. D. Hanna and E. K. Jordan, collectors, July 1925. Seven additional specimens were secured at the same locality. This species was compared with and differs from *Colubraria nitidulus* (Sow-

erby), in being decidedly more slender, having more rounded whorls, and in the more emphatic sculpture.

COLUBRARIA SIPHONATA (Reeve, 1844). Pl. 10, figs. 3, 4; text—fig. 2  
*Triton siphonatus* Reeve. Conch. Icon. Reeve, June 1844, pl. 18  
 no. 81.



Protoconchs of *Colubraria*. 1, *C. jordani* Strong, holotype. 2, *C. aphrogenia* Pilsbry & Lowe, holotype, ANSP. 155341. 3, *C. lanceolata* (Menke), Destin, Florida, ANSP. 194131. 4, *C. lucasensis* Strong & Hertlein, holotype, Cal. Acad. Sci. 6995. 5, *C. reticulata* (Blainville), Italy, ANSP. 37063.

*C. aphrogenia* Pilsbry and Lowe. Proc. Acad. Nat. Sci. Phil. 84: 62, pl. 4, fig. 10.

*C. perla* M. Smith. Naut. 61:55, pl. 2 fig. 2.

*C. panamensis* M. Smith. Naut. 61:55, pl. 2, fig. 6.

*Description:* The slender, fusiform shell is dark bluish gray to light brown spotted with orange brown on whorls and whitish areas on the varices; the 2 whorls of the protoconch are dark purple to light gray in the middle and are followed by 6 subsequent, convex whorls with 8 to 10 spiral cords intersected by narrow axial ribs to form a reticulate pattern; varices, small,

irregularly spaced, about 2 per whorl; the aperture is narrow, contracted into a canal anteriorly; lip finely denticulate.

*Types:* Lectotype, British Museum (Natural History). Type locality: The type locality should be designated as Panama Bay, Panama. Locality records: 12 specimens, Carmen Is., Gulf of Calif., 25 fathoms; 4 specimens, Cabo Haro, Guaymas, Mexico, 50-100 fathoms, Ariel expedition, August, 1960.

M. Smith describes *Colubraria perla* as similar to *C. panamensis*, but with the inner wall of aperture much more bent than in *C. panamensis*. Dr. Myra Keen, 1958, correctly placed *C. perla* in synonymy with *C. panamensis*.

Available for study were the holotype and a paratype of *Colubraria aphrogenia* Pilsbry and Lowe, a lot of 16 specimens of *C. panamensis* Smith, which Dr. Myra Keen stated was a portion of the original group of shells collected by Clark in Panama Bay from which Maxwell Smith undoubtedly selected his shells for description,<sup>1</sup> 2 specimens labeled *C. siphonata* (Reeve) collected by Clark from the Perlas Islands, Panama, a single shell in the Burch collection from the Perlas Islands, Panama with a label reading "*C. siphonatus* = *perla* = *panamensis*," and 16 specimens of this group from several collecting stations in the Gulf of California.

Close scrutiny of the protoconch and of the other shell characteristics shows that all these shells should be considered one species. A word should be mentioned about the holotype of *Colubraria aphrogenia* Pilsbry and Lowe. It is a dead shell and less than half the adult size. Several of the smaller shells of a lot in this group in the writer's collection match perfectly the holotype. As with other groups of shells there is some variation in size, shape, and coloration.

Keen (1958, p. 348) states that the name *C. siphonata* (Reeve) will have priority for the Panamic form if it is not recognized in some other province. After reviewing both current and past literature, the writer's opinion is that a shell answering to the picture and description of *C. siphonata* (Reeve) in *Conchologia Iconica*, Reeve, June 1844, plate 18, number 81, has been found in no other province except tropical west America. The shells from tropical west America agree with both the picture and the description of *C. siphonata* in the *Conchologia*

<sup>1</sup> Keen, A. Myra. (Personal communication), Nov. 9, 1960.

Iconica. Tryon suggested that *C. siphonata* (Reeve) would prove to be a young *C. lanceolata* (Menke), a shell found in the West Indies. In the Conchologia Iconica, Reeve pictures both species and distinguishes between them. *Colubraria siphonata* (Reeve) can be differentiated from *C. lanceolata* (Menke) in that the protoconch is flat, bluish-gray in the middle of the whorl, shading to black at the sutures, whereas *C. lanceolata* (Menke) has a brownish-orange slightly rounded protoconch (text—fig. 3).

*COLUBRARIA SOVERBII* (Reeve, 1844). Pl. 10, figs. 5, 6; text-fig. 4. *Triton reticulatus* Sowerby, 1833, Proc. Zool. Soc. London: 72. (not *Tritonium reticulatum* Blainville, 1829, now in *Colubraria*.)

*Triton soverbii* Reeve. June, 1844, Conch. Icon. Reeve., pl. 16, no. 65, a and b.

*Colubraria lucasensis* Strong and Hertlein, 1937, Proc. Cal. Acad. Sci. (4) 22 (6): 173, pl. 35, fig. 17.

*Description*: Shell rather slender, thick, and solid, generally orange-brown, spotted or streaked with darker and lighter color; the 3 whorls of the conical protoconch are orange followed by 8 sculptured whorls, each with a strong varix; sculpture of fine axial riblets crossed by equally fine spiral threads forming small rows of granules between which are brown excavated lines encircling the shell; inside the lip are 12 small denticles; aperture, oval with a short, reflected canal. Length 43 mm., maximum width 16 mm.

*Type*: Location not known. Type locality: The Galapagos Islands should be designated as the type locality. Locality records: 1 living specimen, Cabo Haro, Guaymas, Mexico, 100 fathoms; 1 specimen, Monserrate Is., Gulf of Calif., 45 fathoms, Ariel expedition, August, 1960.

In Strong and Hertlein's description of *Colubraria lucasensis*, they stated that it resembled the figure of *Triton soverbii* Reeve, but did not have the brown excavated lines, and that the single type specimen was not fully mature and might develop similar characters with 2 or 3 more whorls. The 43 mm. live specimen taken at Cabo Haro, Guaymas, agrees very well with the picture of *Triton soverbii* Reeve and displays the fine brown excavated lines. In addition to these shells, the writer was able to study 7 lots of *Colubraria* from the Galapagos Islands. 4 lots were labeled *C. reticulata* (Blainville), one *C. lucasensis* Hertlein and Strong, and 2 had not been named. These proved to be almost identical with the holotype of *C. lucasensis* Hertlein and Strong, and the protoconchs were the same. To comply with the rules of nomen-